

orous, have *not* the best instincts for the proper construction and concealment of the nest, and for the care and protection of the young, they are certainly not the fittest, and will not survive, or be the parents of survivors. If, on the other hand, there *is* generally this correlation — if, as has been here argued, ornament is the natural product and direct outcome of superabundant health and vigour, then no other mode of selection is needed to account for the presence of such ornament. The action of natural selection does not indeed disprove the existence of female selection of ornament as ornament, but it renders it entirely ineffective; and as the direct evidence for any such female selection is almost *nil*, while the objections to it are certainly weighty, there can be no longer any reason for upholding a theory which was provisionally useful in calling attention to a most curious and suggestive body of facts, but which is now no longer tenable.”¹

Mr. Beddard adds: “In short, we find that the secondary sexual characters of animals are dependent upon the germ glands themselves; and that the sexual diversity of animals is also associated with differences of disposition and habit. There is a fundamental difference between males and females, based upon the actual difference of sex, which generally finds an expression in outward unlikeness. These superficial differences may also be partly due to the different mode of life led by the two sexes. We meet with them in animals which cannot be moved by choice or æsthetic preference; but it is also true that they are most highly developed in the higher animals, where such choice is at least conceivable; the mammal, however, forms a very important exception to this statement” (p. 282).

A fine vein of irony occasionally appears in Mr. Beddard’s comments upon alleged cases of mimicry, and especially of alleged instances of sexual selection, as in respect to the mating and ‘love dances’ of spiders. But on the whole his criticisms are suggestive rather than aggressive.

We have long been of the opinion that most of the cases of supposed ‘warning colors,’ of mimicry, and sexual selection were to be much more satisfactorily accounted for on other grounds than by the special theories that have of late proved so popular with superficial writers, and apparently so fascinating to the still less discerning public, and we are glad to welcome so healthy an antidote to this mild phase of scientific lunacy as Mr. Beddard’s book on ‘Animal Coloration.’ — J. A. A.

Our Hawks and Owls in their Relation to Agriculture. — ‘Bulletin No. 3’ of the Ornithological Division of the U. S. Department of Agriculture,²

¹ Wallace, *Darwinism*, p. 295.

² *The Hawks and Owls of the United States in their Relation to Agriculture.* Prepared under the Direction of Dr. C. Hart Merriam, Ornithologist, by A. K. Fisher M.D., Assistant Ornithologist. Published by Authority of the Secretary of Agriculture. Washington: Government Printing Office, 1893.—8vo, pp. 210, with 26 colored plates = U. S. Department of Agriculture, Division of Ornithology and Mammalogy, Bulletin No. 3.

prepared under the direction of Dr. C. Hart Merriam, Chief of the Division, by Dr. A. K. Fisher, Assistant Ornithologist, is devoted to "a report on the Hawks and Owls of the United States, with special reference to the economic status of the various species." To quote from Dr. Merriam's letter of transmittal: "The statements herein contained respecting the food of the various hawks and owls are based on the critical examination, by scientific experts, of the actual contents of about 2700 stomachs of these birds, and consequently may be fairly regarded as a truthful showing of the normal food of each species. The result proves that a class of birds commonly looked upon as enemies to the farmer, and indiscriminately destroyed whenever occasion offers, really rank among his best friends, and with few exceptions should be preserved and encouraged to take up their abode in the neighborhood of his home. Only six of the 73 species and subspecies of hawks and owls of the United States are injurious. Of these, three are so extremely rare they need hardly be considered, and another (the Fish Hawk) is only indirectly injurious, leaving but two (the Sharp-shinned and Cooper's Hawks) that really need be taken into account as enemies to agriculture. Omitting the six species that feed largely on poultry and game, 2212 stomachs were examined, of which 56 per cent. contained mice and other small mammals, 27 per cent. insects, and only $3\frac{1}{2}$ per cent. poultry or game birds." "In view of these facts," adds Dr. Merriam, "the folly of offering bounties for the destruction of hawks and owls, as has been done by several States, becomes apparent, and the importance of an accurate knowledge of the economic status of our common birds and mammals is overwhelmingly demonstrated."

Dr. Fisher, in his introduction, recounts these generalizations more in detail, and adds: "One of the counties of Pennsylvania paid out in a year over \$5000 for scalps of birds of prey. . . . There is no doubt that this State and others which have passed similar laws have made a serious mistake; for it is indisputable that the opinion about hawks and owls, so widespread and popular, is not well founded; and it is the purpose of this bulletin to set forth the results of many years' observations with the view of dispelling the popular illusion regarding the destructiveness of hawks and owls as a class." He adds that "Owls are among the most beneficial of birds, inflicting very little damage upon the poulturer and conferring vast benefits upon the farmer"; and that "all Hawks, with possibly one or two exceptions, are to some extent beneficial to the farmer."

The various species of rapacious birds are divided into four classes: (1) Those wholly beneficial or wholly harmless. These number six species: Rough-legged Hawk, Squirrel Hawk, Swallow-tailed Kite, White-tailed Kite, Mississippi Kite, and Everglade Kite. (2) Those chiefly beneficial. These include the greater number of the most widely dispersed and best known species of both Hawks and Owls. (3) Those in which the beneficial and harmful qualities seem to balance each other. In this class some species may be beneficial in one part of the country and injuri-

ous in another, as the Great Horned Owl, etc., which in the East preys upon game and poultry, and in parts of the West is highly useful in destroying the superabundant hares and other rodent pests. (4) Those positively harmful, as the two species of Hawks already named, and the Goshawk, Duck Hawk, and Gyrfalcons. The Fish Hawk also comes into this category as it "eats fish, and fish only, and is often a nuisance to the fish culturist. . . . If its fine presence and magnificent flight do not sufficiently plead in its favor, then it must be put on the black list."

The species and subspecies are each taken up in detail, their habitats stated, their food habits explained, followed by a brief description of the species, with a table showing the results of the examination of stomachs. A very good colored plate is given of all the more important or prominent species, thus affording easy means of identification to the farmer or others interested. As a sort of badge of character, the various species are represented as holding in their talons or beaks specimens of their characteristic food, as reptiles, insects, mice, spermophiles, squirrels, birds or poultry, as the case may be. The plates were drawn by Mr. J. L. Ridgway, and their reproduction has been effected with varying degrees of success, some of them being excellent and others far from faultless, either in coloration or artistic effect.

From an economic standpoint this long-expected report should be of the highest importance, and should do much to enlighten not only the farmers but the public at large that a bird is not necessarily to be black-listed and hunted to extermination simply because he is clothed in the garb of a hawk or an owl. It will, however, take much reiteration and intelligent missionary work to allay the unreasoning prejudice against hawks and owls, which from time immemorial has everywhere been inculcated, because, forsooth, there are a few black-legs in the guild. The utility of systematic research concerning economic problems in natural history by experts under government auspices is again abundantly demonstrated in this valuable report upon a long misunderstood but important subject, the relation of birds of prey to agriculture.—J. A. A.

Bolles's 'Chronicles.'—Mr. Bolles's 'At the North of Bearcamp Water'¹ is a companion volume to his 'Land of the Lingering Snow' (see Auk, IX, p. 62), being the second volume of the 'Chronicles of a Stroller,' this time in the New Hampshire highlands. The book, like its predecessor, is very little given to moralizing about what the author sees, and is perhaps for this all the more novel and refreshing. From the naturalists' standpoint Mr. Bolles's record is not less graphic and minute, and quite as readable and more 'scientifically' accurate than the volumes which have

¹ At the North of Bearcamp | Water | Chronicles of a Stroller in | New England | from July to December. | By | Frank Bolles | author of "Land of the Lingering Snow" | [Vignette] | Boston and New York. | Houghton, Mifflin and Company. | The Riverside Press, Cambridge | 1893. 12mo. pp. 297.